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PATENT & TRADEMARK OFFICE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Vizzini, et al.

Serial No.: 10/685,643

Confirmation No.: 4986

Filed: October 15, 2003

For: Improved Process for Forming Ziegler-Natta Catalyst for Use in Olefin Polymerization

Group Art Unit: 1713

Examiner: Lu

Customer No. 25264

Docket No.: COS-913

Mail Stop Appeal Brief-Patents
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P.O. Box 1450
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Dear Honorable Commissioner:

TRANSMITTAL LETTER AND FEE AUTHORIZATION

In connection with the above identified application, Applicants respectfully submit the following documents:

1. Appeal Brief.

The Commissioner is authorized to charge the fee of $500.00, along with any additional fees that may be required for this submission, or credit any overpayments, to Deposit Account No. 03-3345.

Respectfully submitted,

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APPEAL BRIEF

Applicants submit this Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 1713 dated April 11, 2005, finally rejecting claims 1-9, 12-15 and 18.

Real Party in Interest

The present application has been assigned to Fina Technology Inc., P.O. Box 674412, Houston, Texas 77267.

Related Appeals and Interferences

Appellants assert that no other appeals, interferences or judicial proceedings are known to the Appellants, the Appellants' legal representative or Assignee that will directly affect, be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 1-9, 12-15 and 18 are pending in the application and were originally presented in the application. Claims 1-9, 12-15 and 18 stand rejected under 35 U.S.C. §103(a). The rejection of the pending claims is appealed. The pending claims are shown in the attached Appendix A.

Status of Amendments

Clarifying amendments were made to claims 1, 12-14 and 18.

Summary of the Invention

Embodiments of the invention mix a mild chlorinating agent with a magnesium alkoxide compound to form a magnesium-titanium-alkoxide adduct. *See,* specification, at least paragraph 22. Subsequently, the adduct is mixed with an alkylchloride compound such that it converts to a magnesium chloride support. It is believed that the presence of titanium during the precipitation of the $MgCl_2$ plays a major role in producing a highly active catalyst. *See,* specification, at least paragraph 23.

The magnesium chloride support is then treated with $TiCl_4$ to form a catalyst slurry. *See,* specification, at least paragraph 24. As shown in the examples, when the alkylchloride compound is benzoyl chloride or chloromethyl ethyl ether, catalysts with satisfactory particle size distribution were achieved. *See,* specification, at least paragraph 53.

Issues Presented

1. Whether the Examiner erred in rejecting claims 1-9, 12-15 and 18 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,825,146 (*Kilty*) in view of U.S. Patent No. 6,174,971 (*Chen*) on grounds that the references do not teach, show or suggest the process recited in the pending claims.

Arguments

I. THE EXAMINER ERRED IN REJECTING CLAIMS 1-9, 12-15 AND 18 UNDER 35 U.S.C. §103(a) AS BEING UNPATENTABLE OVER *KILTY* IN VIEW OF *CHEN* BECAUSE THE REFERENCES DO NOT SHOW THE CLAIMED PROCESS.

Applicants agree with the Examiner's recitation of the process of *Kilty*. *See*, Final Office Action at page 2. However, such process is not the claimed process. Further, Applicants strongly disagree with the Examiner's assertion that the instant claims are within the scope of *Kilty*'s teaching. *See*, Final Office Action at page 3. To establish a prima facie case of obviousness, the Examiner must show that the prior art relied upon contains some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references and the prior art reference or combination of references must teach or suggest all limitations of the claims. *See*, *Karsten Mfg. Corp. v. Cleveland Gulf Co.*, 242 F. 3d 1376, 1385, 58 U.S.P.Q.2d 1286, 1293 (Fed. Cir. 2001) and *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970.) The references of record, either alone or in combination, do not teach, show or suggest all limitations of the claims.

Kilty teaches contacting a solid precursor composition comprising magnesium, titanium and alkoxide (*i.e.*, a magnesium-titanium-alkoxide adduct) with a titanium halide to prepare a solid procatalyst composition. The solid procatalyst composition is then contacted with a benzoyl chloride halogenating agent. *See*, at least abstract.

In contrast, the pending claims recite (and the specification clearly teaches) contacting a magnesium alkoxide compound with chlorinating agent to form a magnesium-titanium-alkoxide adduct. The adduct is then contacted with an alkylchoride compound and/or benzoyl chloride to form a magnesium chloride support.

For illustration purposes only, Applicants have included a flowchart of embodiments of each process in Appendix B. As illustrated, *Kilty* does teach, show or suggest the process recited in the pending claims. In particular, *Kilty* does not teach forming a magnesium-titanium-alkoxide adduct and contacting that adduct with an alkylchloride.

The Examiner has set forth *Chen* for the purpose of supplying limitations recited in the dependent claims. *See*, Final Office Action at page 2. However, a prima facie case of obviousness has not been demonstrated for the independent claim. Accordingly, Applicants do not deem a full discussion of *Chen* necessary.

Applicants respectfully request reversal of the rejection.

Conclusion

In conclusion, the references nowhere teach, show or suggest the claimed process. Thus, Applicants respectfully request reversal of the rejections of claims 1-9, 12-15 and 18.

Respectfully submitted,

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Appendix A

Pending Claims

1. A process for forming a catalyst for the polymerization of olefins, comprising:
   (a) combining a chlorinating agent with a magnesium alkoxide compound to form a magnesium-titanium-alkoxide adduct; ~~and~~
   (b) combining the magnesium-titanium-alkoxide adduct with an alkylchloride compound and/or benzoyl chloride to form a magnesium chloride support; and
   (c) combining the magnesium chloride support with a titanium chloride to form the catalyst.

2. The process of claim 1, wherein the magnesium alkoxide is formed by reacting a magnesium alkyl with an alcohol generally represented by the formula ROH, wherein R is an alkyl group containing about 1 to 20 carbon atoms.

3. The process of claim 2 wherein the magnesium alkyl is butylethylmagnesium.

4. The process of claim 3, wherein the alcohol is 2-ethyl hexanol.

5. The process of claim 1, wherein the chlorinating agent is generally represented by the formula:

$$TiCl_n(OR')_{4-n}$$

wherein R is an alkyl, cycloalkyl, or aryl group, and wherein n is from 1 to 3.

6. The process of claim 5, wherein n is 1.

7. The process of claim 1, wherein the chlorinating agent is $ClTi(O^iPr)_3$.

8. The process of claim 4, wherein the chlorinating agent is $ClTi(O^iPr)_3$.

9. The process of claim 1, wherein the alkylchloride compound is selected from the group consisting of benzoyl chloride, chloromethyl ethyl ether, and t-butyl chloride.

12. The process of claim 1 wherein the benzoyl chloride / magnesium molar ratio is from about 1 to about 20.

13. The process of claim 1 wherein the benzoyl chloride / magnesium molar ratio is from about 1 to about 10.

14. The process of claim 1 wherein the benzoyl chloride / magnesium molar ratio is from about 4 to about 8.

15. The process of claim 1, wherein the reacting the magnesium-titanium-alkoxide adduct with the alkylchloride compound also forms a by-product selected from the group consisting of an ether compound, an alcohol compound, and mixtures thereof.

18. The process of claim 1, further comprising washing the magnesium chloride support prior to forming the catalyst.

Appendix B

Process Illustration

An embodiment of the pending claims:

a. $Mg(OR)_2 + TiCl_n(OR)_{4-n}$ -> Mg-Ti-Alk (Ti adduct)

b. Ti adduct + R"Cl -> Ti-$MgCl_2$ (Ti impregnated support)

c. Ti-$MgCl_2$ + $TiCl_4$ -> Catalyst

Kilty:

a. Ti-Mg-Alk + $TiCl_4$ -> Ti-$MgCl_2$

b. Ti-$MgCl_2$ + benzoyl Cl -> Ti-$MgCl_2$

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Appendix C

Evidence

1. *Karsten Mfg. Corp. v. Cleveland Gulf Co.*, 242 F. 3d 1376, 1385, 58 U.S.P.Q.2d 1286, 1293 (Fed. Cir. 2001.)

2. *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970.)